

Don't fear the bleed: assessing postoperative bleeding risk after instituting a standardized prophylactic heparin protocol in bariatric patients

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I have no potential conflict of interest to report





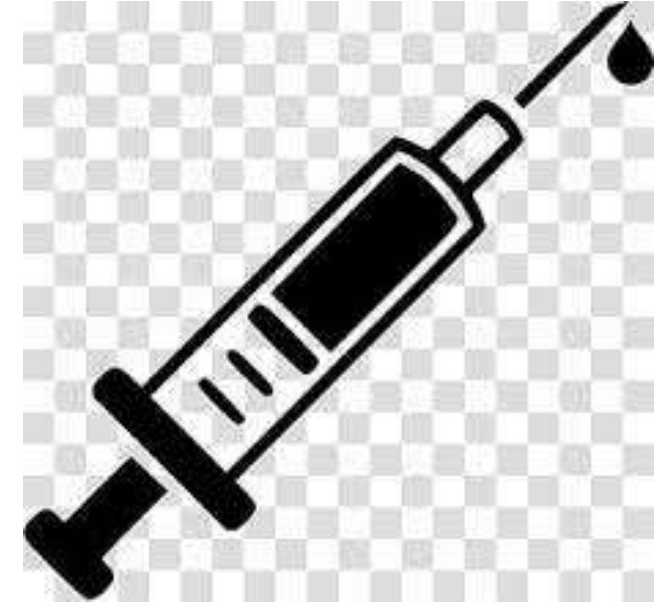
Bariatric surgery numbers back to pre-COVID numbers

- 262,893 cases reported by ASMBS in 2021



High risk for DVT (1-3% postop); also risk for postop bleeding (1.5-3%)

High mortality with PE



No guidelines exist for postoperative DVT prophylaxis

Montefiore Medical Center- DVT Prophylaxis Protocol

- 5000u unfractionated heparin (subQ) preoperative on table
- 5000u unfractionated heparin (subQ) every 8 hours postoperative
- Early ambulation for all patients
- Sequential compression device use
- **ALL** patients discharged with 40mg (subQ) enoxaparin twice daily for 14 days
 - EXCEPTIONS:
 - Already on therapeutic anticoagulation
 - Patients requiring immediate postoperative TXA or blood transfusion

Data Review/Collection: MBSAQIP data for 2019 and 2021 and electronic record review

Intervention: institution of standardized post discharge enoxaparin protocol (2021)

Inclusion Criteria:

- >18 years old
- Primary sleeve gastrectomy or roux en Y gastric bypass
- Conversion from sleeve gastrectomy to roux en Y gastric bypass

Exclusion Criteria:

- Patients using therapeutic anticoagulation preoperatively
- Patients not discharged home on enoxaparin

Primary Outcome: composite bleeding events after discharge

Secondary Outcomes: DVT, incisional hematoma, GI bleed, postoperative transfusion, intra-abdominal hematoma, endoscopy for bleeding, return to OR for bleeding

Procedures by Year

	2019 (n%)	2021 (n%)	p
Sleeve	685 (50.4)	675 (49.6)	0.99
Bypass	354 (50.4)	349 (49.6)	0.99
Conversion	84 (30.8)	189 (69.2)	<0.001

Patient Characteristics

	2019 n (%)	2021 n (%)	p
Age	41.6 (\pm 12.3)	38.5(\pm 11.7)	<0.001
Female	872 (49.9)	877 (50.1)	0.27
BMI	44.6 (\pm 8.0)	44.6 (\pm 7.7)	0.91
ASA Class			
1	1 (100)	0 (0)	
2	237 (58.1)	171 (41.9)	
3	795 (48.3)	850 (51.7)	
4	6 (66.7)	3 (33.3)	
CKD	2 (66.7)	1 (33.3)	1.00
COPD	11 (57.9)	8 (42.1)	0.51
Diabetes Mellitus	279 (61)	178 (39)	<0.001
GERD	293 (57.1)	220 (42.9)	0.004
HLD	202 (56.4)	156 (43.6)	0.01
HTN	439 (58.1)	317 (41.9)	<0.001
MI	3 (30)	7 (70)	0.22
OSA	309 (51.4)	292 (48.6)	0.54
PCI/Stent	4 (50)	4 (50)	1.0
PE	2 (20)	8 (80)	0.06
DVT	2 (13.3)	13 (86.7)	0.004

Evaluation of Postdischarge Bleeding Events

	2019 n(%)	2021 n(%)	p
Composite Bleeding Events	27 (2.6)	28 (2.7)	0.84
Incisional Hematoma	17 (1.6)	13 (1.27)	0.49
Postop Transfusion	3 (0.29)	4 (0.39)	0.72
Postop GI Bleed	7 (0.67)	9 (0.88)	0.62
Intra-abdominal hematoma	5 (8.3)	5 (5.3)	0.51
Endoscopy for Bleeding	2 (0.19)	1 (0.1)	1.0
Bleeding requiring OR	3 (0.29)	1 (0.1)	0.62
Postop DVT	2 (0.19)	5 (0.49)	0.28

Magnitude of Postdischarge Bleeding Events

	2019	2021	p
	n (%)	n (%)	
1 event	20 (45.5)	24 (54.5)	
2 events	5 (62.5)	3 (37.5)	
3 events	1 (50)	1 (50)	
4 events	1 (100)	0 (0)	0.75

Bleeding Events for Sleeve Gastrectomy—Post Protocol

	Re-enforced(n%)	Oversewn (n%)	p
Total Cases	447 (66.2)	228 (33.8)	
Bleeding Events	3 (0.67)	2 (0.88)	1.0

Discussion

No increased rate of bleeding events when utilizing a post discharge low molecular weight heparin protocol

- No significant rate increase in DVT
- Fewer operative/procedural interventions for bleeding—improvement in surgical technique
- Consider type of DVT prophylaxis upon discharge

Limitations:

- Retrospective study
- Limited follow up since institution of protocol
- Outside variables—genetics, COVID19

Future Implications/Directions:

- Continued study of outcomes
- Comparison to protocols with other types of anticoagulation
- Broader institution of protocol nationally

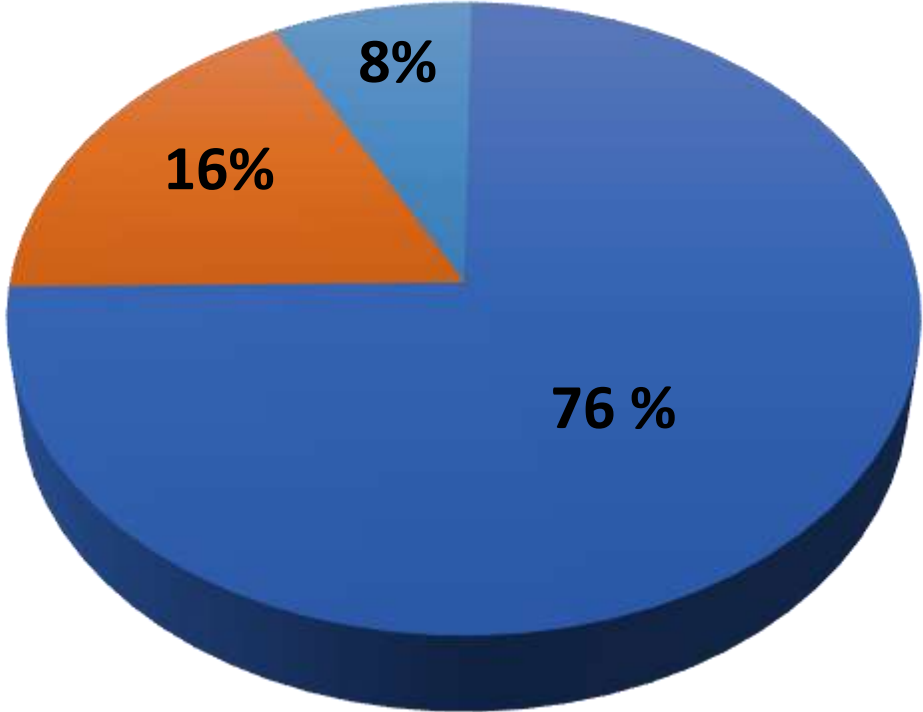


Conclusion

No increased risk of bleeding events with the standard use of post discharge low molecular weight heparin without increase in DVT rates

- After further study, society guidelines should consider stronger recommendations regarding post discharge chemical DVT prophylaxis

CASE MIX DISCLOSURE



- RYGB
- SG
- OAGB
- DS/SADI-S
- REVISIONAL
- ENDOSCOPIC